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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
MA, JOHNNY

ART UNIT	PAPER NUMBER
2614	7

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/583,388	GORDON ET AL.	
	Examiner	Art Unit	
	Johnny Ma	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 May 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05/30/2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

1. The drawings are objected to because there are numerous discrepancies between reference numbers disclosed in submitted specification and applicant's submitted drawings. The examiner suggests that the applicant review the specification and drawings to make appropriate corrections. See below for some inaccuracies noted by examiner A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: "111H" of Figure 1, "704_2, 704_3" of Figure 7, and "1208" of Figure 12. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "562" of page 19, "900, 902" of page 15, and "1550 of page 22. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-6, 8, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ludvig et al. (US 6,415,437) in further view of Boice et al. (US 2001/0001614)..

As to claim 1, the claimed encoding a non-blank background for the information section; and skip encoding a blank background for the display section. The Ludvig et al. reference discloses a method and apparatus for combining video sequences with an interactive program guide where the IPG 500 contains a background 502, a plurality of video display regions 504, 506, and 508, and a program guide graphic 510 (Ludvig et al. 4:5-7). Note, the Ludvig et al. reference considers program guide graphics data as grid foreground data (see Figure 2). The Ludvig et al. reference also discloses each encoder 204 encodes an IPG screen sequence to form a compressed video bitstream, e.g., an MPEG-2 compliant bitstream (Ludvig et al. 6:14-16). However, the Ludvig et al. reference is silent as to the means in which IPG screen sequence is compressed. The Boice et al. reference discloses adaptive encoding of a sequence of still frames or partially still frames within motion video where for example, a partial still picture may be a picture with a stationary background and motion in the foreground (Boice et al. [0081]). To restate, in accordance with this aspect of the invention if there is a partially still picture, then for every macroblock of the picture, the motion vectors are evaluated to determine whether there is a difference between the current picture and the previous picture. If the difference data is small, then the difference is written off as noise and the macroblock difference (MBD) or prediction

error is made zero. In this case, the macroblock is assigned the reference quantization level of the last reference, partially still picture, thereby making stationary that portion of the current picture since the average quantization level of the reference picture is used as a minimum quantization level for corresponding macroblocks. This scheme thus produces stable backgrounds in partially still pictures by maintaining the macroblock coding type and the macroblock quantization level. For a P type picture, processing determines whether For a P type picture, processing determines whether the motion vector in the motion estimation result is zero, and whether the prediction error or macroblock difference (MBD) is less than a predefined threshold. This predefined threshold can again be experimentally determined, and in the example of FIG. 9, comprises 64. If both of these conditions are met, then the macroblock difference is set to zero making the macroblock a skip macroblock and the quantization level for the macroblock is set to the average quantization level for the reference picture in the GOP. Thereafter, processing determines whether the current macroblock comprises the last macroblock of the picture. If not, the macroblock counter is incremented 710 to initiate processing of the next macroblock, otherwise return is made to process a next picture 720. [0085] Assuming that the current picture type 650 is B, then processing next inquires whether the motion vector in the motion estimation result is equal to the motion vector of the previous macroblock of the same picture and whether the macroblock difference is less than a predefined threshold 680. In this example, the predefined threshold is again assigned a value of 64, which can be varied as desired based upon experimentation. If both conditions are met, then the macroblock is again defined as a skip macroblock and the quantization level for the macroblock is set to the average quantization level for the reference frame 670. If the requirements of either inquiry 660 or 680

are unmet, then the macroblock difference value remains the determined macroblock difference value and a quantization level is calculated as conventionally done for MPEG encoding 690. The resulting MBD and quantization level values are employed in encoding the current macroblock. Subsequently, processing inquires whether the current macroblock is the last macroblock of the picture 700, and proceeds therefrom as described above [Boice et al. [0084-0085]. Note, that the examiner considers the background not overlapped by guide overlay and video display regions to be a blank background and thus skip encoded. As disclosed in Ludvig et al. this seamless play occurs because each of the IPG pages contains the same, frame synchronized background and advertising and only the IPG graphic changes from page to page (Ludvig et al. 5:30-36) where IPG graphic is not encoded because of its foreground status and changing nature. Therefore, the examiner submits that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Ludvig et al. electronic program guide transmission scheme with the Boice et al. skip encoding for the purpose of conserving bandwidth during the transmission of electronic program guide information.

As to claim 2, the claimed where encoding the information section includes quantizing a transformed image using a quantizer stepsize that is relatively low so as to substantially maximize a bit rate allocated to the information section. The Ludvig et al. reference discloses each encoder 204 encodes an IPG screen sequence to form a compressed video bitstream, e.g., an MPEG-2 compliant bitstream (6:14-16). However, the Ludvig et al. reference is silent as to the means for compressing a video bitstream. The Boice et al. reference discloses adaptive encoding of a sequence of still frames or partially still frames within motion video where figure 1 of the Boice et al. reference illustrates quantization performed on transformed macroblock data (Boice

et al, see Figure 1). Therefore, the examiner submits that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Ludvig et al. electronic program guide transmission scheme with the Boice et al. skip encoding for the purpose of providing a means for compressing video bitstream prior to transmission.

As to claim 3, the claimed where the user interface comprises an interactive program guide, where the information section comprises a program grid section, and where the display section comprises a multimedia section. The Ludvig et al. reference discloses the IPG 500 contains a background 502, a plurality of video display regions 504, 506, and 508, and a program guide graphic 510 (Ludvig et al. 4:5-7).

As to claim 4, the claimed where the non-blank background comprises a striped background. Please refer to Ludvig et al. Figures 5A-5C where a striped background grid is illustrated.

As to claim 5, the claimed where the user interface is encoded at server for display at a client terminal. The Ludvig et al. reference discloses to assist a subscriber (or other viewer) in selecting programming, the SPE 102 produces a interactive program guide (IPG) in accordance with the present invention (Ludvig et al. 3:63-65). The Ludvig et al. reference also discloses the system 100 contains service provider equipment (SPE) 102 (e.g., a head end), a distribution network 104 (e.g., hybrid fiber-coax network) and subscriber equipment (SE) 106 (Ludvig et al. 3:38-41).

As to claim 6, the claimed where the server is located at a headend of a cable TV distribution system. Please refer to rejection of claim 5.

As to claim 8, the claimed dividing the information section into macroblocks; forward transforming each macroblock to generate a transformed image; quantizing the transformed image to generate a quantized image; and encoding the quantized image to generate an encoded image of each macroblock, where the information section includes background stripes, and where the macroblocks do not cross any border between two adjacent background stripes. The Ludvig et al. reference in Figures 5A-5C illustrate an information section including background stripes and where there is no cross between two adjacent background stripes. The Ludvig et al. reference also discloses each encoder 204 encodes an IPG screen sequence to form a compressed video bitstream, e.g., an MPEG-2 compliant stream (Ludvig et al. 6:14-16).. However, the Ludvig et al. reference is silent as to the method for compression of a bitstream. The Boice et al. reference discloses as shown in FIG. 1 the motion vectors, once generated, are used for the translation of the macroblocks of pixels, from the ith picture to the I+1th picture (Boice et al. [0034]). As shown in FIG. 1, in the encoding process, the images of the i.sup.th picture and the i+1.sup.th picture are processed in the encoder 11 to generate motion vectors which are the form in which, for example, the i+1.sup.th and subsequent pictures are encoded and transmitted. An input image 111 of a subsequent picture goes to the motion estimation unit 43 of the encoder. Motion vectors 113 are formed as the output of the motion estimation unit 43. These vectors are used by the motion compensation Unit 41 to retrieve macroblock data from previous and/or future pictures, referred to as "reference" data, for output by this unit. One output of the motion compensation Unit 41 is negatively summed with the output from the motion estimation unit 43 and goes to the input of the Discrete Cosine Transformer 21. The output of the discrete cosine transformer 21 is quantized in a quantizer 23. The output of the quantizer 23 is split into two

outputs, 121 and 131; one output 121 goes to a downstream element 25 for further compression and processing before transmission, such as to a run length encoder; the other output 131 goes through reconstruction of the encoded macroblock of pixels for storage in frame memory 42. In the encoder shown for purposes of illustration, this second output 131 goes through an inverse quantization 29 and an inverse discrete cosine transform 31 to return a lossy version of the difference macroblock. This data is summed with the output of the motion compensation unit 41 and returns a lossy version of the original picture to the frame memory 42. (Boice et al. [0035]). Therefore, the examiner submits that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Ludvig et al. electronic program guide transmission scheme with the Boice et al. skip encoding for the purpose of providing a means for encoding a MPEG compliant stream (Boice et al. [0034]).

As to claim 9, the claimed forward transforming a source image of the information section to generate a transformed image; low-pass filtering the transformed image to generate a filtered image; quantizing the filtered image to generate a quantized image; and encoding the quantized image to generate an encoded image of the information section, where the information section includes background stripes, and where the low-pass filtering reduces visual defects from encoding of the background stripes. The Ludvig et al. reference in Figures 5A-5C illustrate an information section including background stripes and where there is no cross between two adjacent background stripes. The Ludvig et al. reference also discloses each encoder 204 encodes an IPG screen sequence to form a compressed video bitstream, e.g., an MPEG-2 compliant stream (Ludvig et al. 6:14-16). However, the Ludvig et al. reference does not disclose a means for compressing a video bitstream or the use of low-pass filtering to reduce visual

defects. The Boice et al. reference discloses as shown in FIG. 1 the motion vectors, once generated, are used for the translation of the macroblocks of pixels, from the ith picture to the I+1th picture (Boice et al. [0034]). As shown in FIG. 1, in the encoding process, the images of the i.sup.th picture and the i+1.sup.th picture are processed in the encoder 11 to generate motion vectors which are the form in which, for example, the i+1.sup.th and subsequent pictures are encoded and transmitted. An input image 111 of a subsequent picture goes to the motion estimation unit 43 of the encoder. Motion vectors 113 are formed as the output of the motion estimation unit 43. These vectors are used by the motion compensation Unit 41 to retrieve macroblock data from previous and/or future pictures, referred to as "reference" data, for output by this unit. One output of the motion compensation Unit 41 is negatively summed with the output from the motion estimation unit 43 and goes to the input of the Discrete Cosine Transformer 21. The output of the discrete cosine transformer 21 is quantized in a quantizer 23. The output of the quantizer 23 is split into two outputs, 121 and 131; one output 121 goes to a downstream element 25 for further compression and processing before transmission, such as to a run length encoder; the other output 131 goes through reconstruction of the encoded macroblock of pixels for storage in frame memory 42. In the encoder shown for purposes of illustration, this second output 131 goes through an inverse quantization 29 and an inverse discrete cosine transform 31 to return a lossy version of the difference macroblock. This data is summed with the output of the motion compensation unit 41 and returns a lossy version of the original picture to the frame memory 42. (Boice et al. [0035]). However, the Boice et al. reference is also silent as to the use of low-pass filtering. Nevertheless, the examiner gives Official Notice that it is notoriously well known in the art of video encoding to use low-pass filtering for the purpose of

facilitating the separating of background information. Therefore, the examiner submits that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Ludvig et al. electronic program guide transmission scheme with the Boice et al. encoding scheme and a low-pass filter for the purpose of providing a means for encoding a MPEG compliant stream (Boice et al. [0034]) and to facilitate the separation of background information.

3. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barret et al. (US 6,412,112)..

As to claim 7, the claimed forward transforming a source image of the information section to generate a transformed image; quantizing the transformed image to generate a quantized image; and encoding the quantized image to generate an encoded image of the information section, where said quantizing involves using a quantization matrix adjusted to better optimize display of text in the information grid. The Barret et al. reference discloses a system for transmitting digital data through a lossy channel where the system involves selecting a set of digital data to be distributed, for instance, client terminal software updates or electronic programming guides, and converting the data to an intermediate format compatible with video broadcast (2:23-27). The Barret et al. reference also discloses after digitization of the video signal, a mathematical operation known as a discrete cosine transform (DCT) is carried out on each block of pixels to extract spatial frequency coefficients from the blocks (5:66-67; 6:1-3). Figure 5 of the Barret et al. reference illustrates quantizing the discrete cosine transform followed by encoding (see Figure 5). The Barrett et al. reference also discloses the output data of the DCT step, i.e. the 8x8 matrix of frequency component values, is indicated schematically

between the DCT and Quantization blocks (6:15-17). However, the Barrett et al. reference does not specifically disclose a quantization matrix adjusted to better optimize display of text in the information grid. Nevertheless, the examiner gives Official Notice that it is notoriously well known in the art of video and image processing to use quantization matrices optimized for a variety of image or video types, such as photos using JPEG, graphics, or text for the purpose of providing compressed data with a minimal loss to image quality. Therefore, the examiner submits that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Barrett et al. video signal accordingly for the stated advantages.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Johnny Ma whose telephone number is (703) 305-8099. The examiner can normally be reached on 8:00 am - 6:00 pm (First Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Miller can be reached on (703) 305-4795. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-5399 for regular communications and (703) 308-5399 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

jm
June 2, 2003

JOHN MILLER
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